

REMARKS

Claims 1-21 are all the claims presently pending in the application. Claims 1-7 have been amended and claims 8-21 have been added to more particularly define the invention.

It is noted that the claim amendments are made only for more particularly pointing out the invention, and not for distinguishing the invention over the prior art, narrowing the claims or for any statutory requirements of patentability. Further, Applicant specifically states that no amendment to any claim herein should be construed as a disclaimer of any interest in or right to an equivalent of any element or feature of the amended claim.

Claims 1-7 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Kawasaki (U.S. Pat. No. 5,601,149), further in view of Taylor (U.S. Pat. No. 6,098,726).

These rejections are respectfully traversed in the following discussion.

I. THE CLAIMED INVENTION

The claimed invention (e. g., as recited in claim 1) is directed to a power tool including a powered drive source, a speed reduction mechanism portion for transmitting a rotational power of the powered drive source, a striking mechanism portion for converting the rotational power of the speed reduction mechanism portion into a striking force, an end tool for outputting the striking force and a rotational force through the striking mechanism portion, and an impact damping mechanism for damping an impact in a direction of rotation of the speed reduction mechanism portion.

In conventional power tools, a rotational impact force is allowed to act on a speed reduction mechanism portion, causing damage to this portion.

The claimed invention, on the other hand, includes an impact damping mechanism for

damping an impact in a direction of rotation of the speed reduction mechanism portion.

Therefore, the claimed invention inhibits a rotational impact force from acting on a speed reduction mechanism portion, preventing damage to this portion.

III. THE KAWASAKI AND TAYLOR REFERENCES

The Examiner alleges that Kawasaki would have been combined with Taylor to teach the claimed invention. However, Applicant submits that these references would not have been combined as alleged by the Examiner and even if combined, the combination would not teach or suggest the claimed invention.

Kawasaki discloses a percussion hammer for screw fastening work (col. 2, lines 39-43). The device includes an angular component F1 to generate a force for a screw fastening operation by rotating or fastening a screw 17 via a tip tool 16 into an opponent member 18 (Kawasaki, col. 1, lines 55-60). Figure 1 illustrates a hand-held device including a grip section "X" (col. 4, lines 3-5). In other words, Kawasaki discloses a hand-held device for fastening screws into walls or structural framing pieces.

Taylor is directed to an entirely different matter and different technology than Kawasaki, and for that matter the claimed invention.

Taylor discloses a downhole rotary drill bit for drilling a borehole in subsurface formations typically used in the oil and gas industry. "The device is for use in drilling systems where the drill bit is mounted on a drill collar in a bottle hole assembly mounted on a drill string which is rotated at the surface," (emphasis Applicant's) (Taylor, col. 1, lines 6-11).

In other words, Taylor does not disclose a hand-held tool, but rather a drilling cutter at

the end of a long section of pipe (col. 1, lines 15-62). One skilled in the art knows that this device is for drilling boreholes hundreds, or thousands, of feet below the ground surface through hard subsurface formations under thousands of pounds of pressure, such as the drilling equipment used for drilling oil and gas or deep water wells. Clearly, the cutter in Taylor is completely unrelated to hand-held tool in Kawasaki.

One skilled in the art also recognizes that this technology requires significant surface-mounted drilling equipment including drilling rigs, significant manpower to operate, permits and typically an extraordinary amount of horsepower from a large engine mounted on a truck or support structure to operate. In contrast, Kawasaki's device is a hand-held power tool with a rechargeable battery (see Figure 2, "B").

Taylor's disclosure also does not use percussion techniques to drill. Downhole rotary drills merely turn in a clockwise direction under downward pressure on the bit, while the preform cutters (PDC) grind up rock and soil. Drilling fluid pumped through the drill pipes and PDC carry the rock cuttings up to the surface (col.1, lines 15-25). A well-known problem with deep-hole drilling is that the torsional vibrations may momentarily cause a reverse rotation of the drill collar, thereby damaging the downhole bit and collar (Taylor, col. 1, lines 35-50).

Again, these are far different technologies. Kawasaki discloses a hand-held power screwdriver, and Taylor a deep-hole rotary drill bit for drilling thousands of feet into the subsurface under thousands of pounds of pressure.

Further, Applicant submits that the Examiner can point to no motivation or suggesting in the references to urge the combination as alleged. The two disclosures cannot be combined together and certainly would not be combined by one skilled in the art of either designing

power screwdrivers or designing downhole drilling equipment.

Moreover, even assuming arguendo that these references would have been combined, there are elements of the claimed invention that are not taught or suggested by such alleged combination.

Specifically, the Examiner alleges that Figure 2 of Kawasaki discloses a “motor” M, a “speed reduction mechanism” 21, and a “striking mechanism portion” 21, and an “end tool” 16, as described in claim 1. The Examiner admits that Kawasaki does not disclose an impact damping mechanism, but alleges that Taylor teaches such a device.

However, Applicant respectfully submits that neither Kawasaki nor Taylor teaches or suggests “an impact damping mechanism for damping an impact in a direction of rotation of said speed reduction mechanism portion” as recited in claim 1.

First, Applicant respectfully submits that Taylor fails to teach or suggest an “impact damping mechanism” in the context of the claims. The Examiner has analogized part 44 of Taylor to the impact damping mechanism of the claimed invention. However, part 44 is described as “bodies of rubber [that] extend for the whole length of the shaft 20”, within tubular sleeve 24 (Taylor, col. 4, lines 45-52) for a downhole drilling device. The present invention, as described in an exemplary embodiment however, is a hand-held power tool such as an impact screwdriver, and has no relation to Taylor’s device (Application, p. 1, lines 1-5).

Further, regarding the operation of the Taylor device, it is stated that,

“[i]n operation during downhole drilling the shaft 20 is rotated clockwise as seen in Fig. 2. The bodies 44 of rubber are compressed and the clockwise torque is transmitted through the bodies of rubber to the sleeve 24 and hence to drill bit 14. Torsional vibrations in the drill string and drill collar 12 are

damped by the bodies 44” (Taylor, col. 4, lines 53-59).

Thus, there is no teaching or suggestion that downhole drill bits 14 and rubber body 44 that are “rotated clockwise” is the same as “an impact damping mechanism for the purpose of damping an impact n a direction of rotation” as recited in claim 1. These are simply two different techniques and concepts. Indeed, Taylor’s device does not “impact” or “strike” the subsurface, it simply rotates.

In direct contrast to the Taylor device, the claimed invention includes an impact damping mechanism which dampens “an impact in a direction of rotation of said speed reduction mechanism portion,” as recited in claim 1. In an exemplary embodiment of the present Application, hammer 5 strikes anvil claw 17b as a result of rotation, thereby producing a pulse-like impact which is imparted to a screw, a nut or the like, to be tightened by end tool 20 (see Application, p. 8, lines 4-8). The hammer moves in a reciprocal manner while also rotating, and by doing so, the screw is tightened while the power tool continuously imparts the impact torque thereto (Application, p. 8, lines 23 - page 9, line 1).

Importantly, dampening the impact in a direction of rotation of the speed reduction mechanism portion is important because it enhances durability of the power tool so that the lifetime of the tool can be increased, allows less-expensive parts to be used in the power tool to lower the overall cost, and lowers the fatigue of an operator by reducing vibration of the tool during operation (Application, p. 13).

Again, Taylor has no disclosure or suggestion of a damping mechanism for damping an impact, thereby reducing vibrations of the tool. Taylor’s rubber members 44 are for a far different technology that dampens a rotary vibration forces in a downhole drill string and equipment caused by very different means (e.g., thousands of pounds of pressure of coring

through subsurface rock) than encountered by claimed invention.

Therefore, Applicants assert that there is no teaching or suggestion of “an impact damping mechanism for damping an impact in a direction of rotation of said speed reduction mechanism portion.” as recited in claim 1 (emphasis ours).

Therefore, for at least the reasons stated above, Applicants submit to the Examiner that neither Kawasaki, nor Taylor, nor their combination teaches or suggests every feature of claims 1-7. Thus, Applicants submit that the claims are fully patentable over the cited references.

III. FORMAL MATTERS AND CONCLUSION

Minor errors have been corrected in the disclosure.

The Office Action objects to Figure 8. However, Applicant submits that Figure 8 depicts “related art” which was known only within the confines of the assignee of the present Application at the time of filing and, thus, should not be labeled “Prior Art”. Therefore, the attached Request for Approval of Drawing Corrections amends Figure 8 to label it as “Related Art”.

In view of the foregoing, Applicant submits that claims 1-21, all the claims presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.


Serial No. 10/085,585
Docket No. H07-137800M/NHK

18

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.

Respectfully Submitted,

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